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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/763,984 | 01/23/2004 | Sang-Ho Kim | 5000-1-531 | 8230 |

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| EXAMINER | |
|---|---|
| PETERSON, CHRISTOPHER K | |
| **ART UNIT** | **PAPER NUMBER** |
| 2609 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/763,984 | KIM ET AL. | |
| | Examiner | Art Unit | |
| | Christopher K. Peterson | 2609 | |

*– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-7 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 January 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "202". Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

3. The disclosure is objected to because of the following informalities: In paragraph 11 reference character "23" has been used to designate both "image sensor" and "infrared ray filter" (Para 11). Figure 2 shows the image sensor to be "22".

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman (US Patent Pub. # 2004/0056365) in view of Ikeda (US Patent Pub. # 2004/0212719.

As to claim 1 and 4, Kinsman teaches an image sensor module for use with a camera apparatus, the image sensor module comprising:

- a circuit board section (flexible circuit 64) including a transparent material (secondary substrate 44) and having an upper surface (second side 72) onto which a circuit pattern (conductive traces 26) and a filter (transparent substrate 18) (Para 35) are simultaneously bonded (sealant 36) (Para 39). Figure 15a shows the circuit pattern on the first side (70) of the flexible circuit. Kinsman teaches vias (27) may be etched into flex circuit 64, filled

by electroless or electroplating, or filled with a conductive or conductor-filled polymer, after which second attachment points 30 are formed. The vias (27) could be located at the attachment points (28); therefore the circuit pattern would be on the upper surface.

- an image sensor chip (2) bonded to a lower surface (first side 70) of the circuit board section (flexible circuit 64) using a flip chip bonding technique (Para 37);

Kinsman does not teach:

- an infrared ray filter;
- a lens holder bonded to the upper surface of the circuit board section using an epoxy bonding process;
- a lens assembly bonded to an upper surface of the lens holder using the epoxy bonding process.

Ikeda teaches

- an infrared ray filter (IR filter glass 101 see fig. 3) (Para 39);
- a lens holder (first lens frame 12) bonded to the upper surface of the circuit board section using an epoxy bonding process (Para 33 - 34). Ikeda cites the limitation "adhesive" to bond the lens holder. An adhesive is an epoxy.
- a lens assembly (first lens 10) bonded to an upper surface of the lens holder using the epoxy bonding process (Para 32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided an infrared ray filter, lens holder, and lens assembly as taught by Ikeda to the image sensor of Kinsman, because the imaging device is miniaturized to a size of the image sensor chip as well as its manufacturing cost is substantially reduced (Para 59 of Ikeda).

As to claim 4, claim 4 differ from claim 1 only in that claim 4 cites a "terminal", whereas claim 1 cites an "image sensor module". Ikeda teaches a small size camera module (image sensor module) incorporated into a mobile phone (terminal) (Para 4).

As to claim 6, this claim differs from claim 1 only in that the claim 1 is an apparatus claim whereas claim 6 is a method. Thus method claim 6 is analyzed as previously discussed with respect to claim 1 above.

As to claim 2, Kinsman teaches the image sensor module as claimed in claim 1, wherein the circuit board section includes a printed circuit board (rigid substrate 76) and a flexible circuit board (flexible circuit 64) (Para 51).

As to claim 3, Kinsman teaches the image sensor module as claimed in claim 1, wherein transparent material (secondary substrate 44) includes CU PET or CU PI (Para 42). Pi is the abbreviation for polyimide.

As to claim 5, the terminal as claimed in claim 4, wherein the terminal (mobile phone camera) is a video camera, an electronic still camera (mobile phone camera), a PC camera terminal, or a PDA (Para 4 of Ikeda).

As to claim 7, Kinsman teaches the method as claimed in claim 6, wherein, in step i), a bonding part (sealant 36) including transparent material (secondary substrate

44) is formed on the circuit board section (flexible circuit 64) in order to bond the circuit pattern (conductive traces 26) and the infrared ray filter (transparent substrate 18) to the circuit section (Para 39).

### *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yang (US Patent Pub. # 2004/0056971) cites thin type camera module.

Kastner (US Patent # 6896938) cites metallized film, method for the production thereof, and use thereof.

### *Inquiries*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher K. Peterson whose telephone number is 571-270-1704. The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh D. Nguyen can be reached on 571-272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CKP
17 April 2007

CHANH D. NGUYEN
SUPERVISORY PATENT EXAMINER